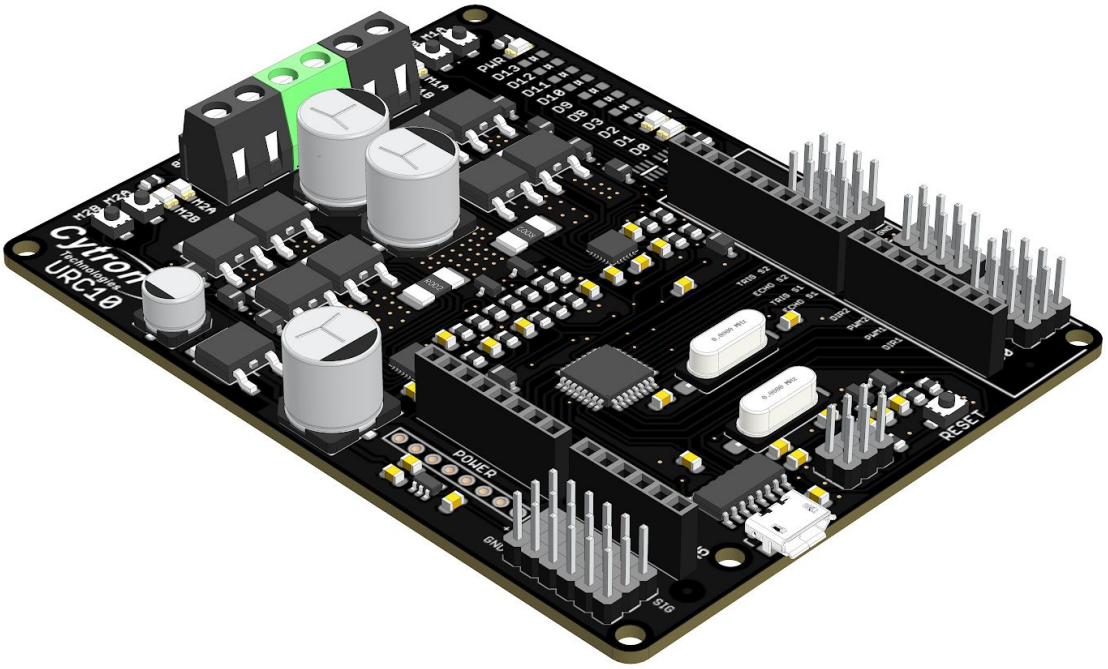
URC10
Sumo Robot Controller



Datasheet

Rev 1.0
March 2019

1. BOARD LAYOUT & FUNCTION

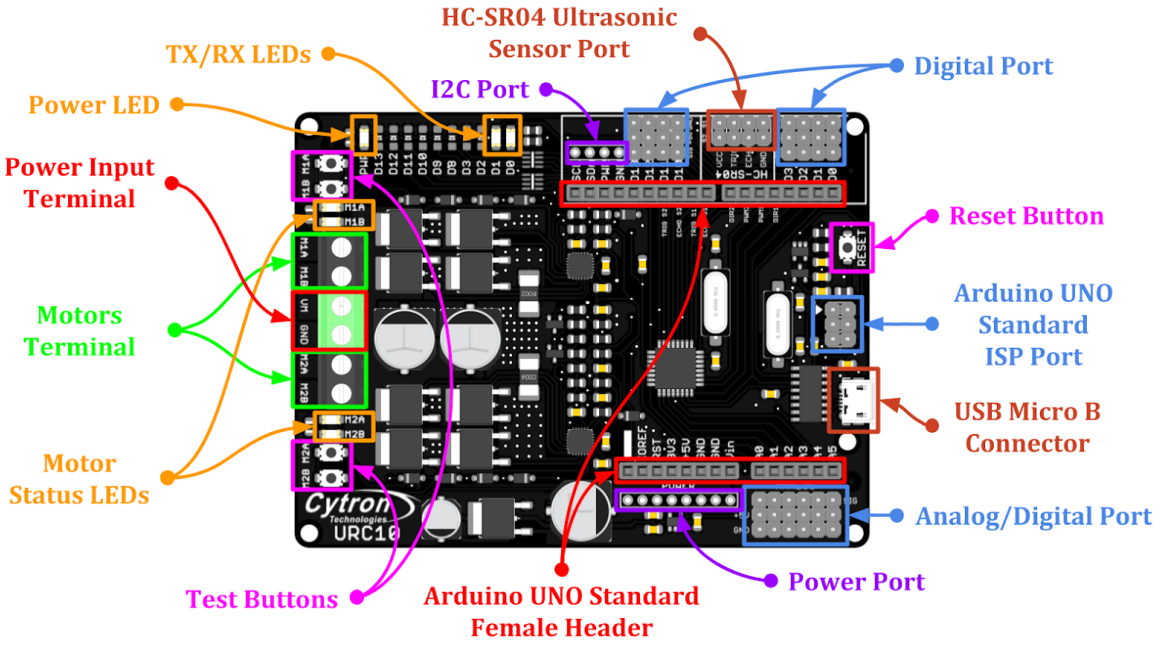
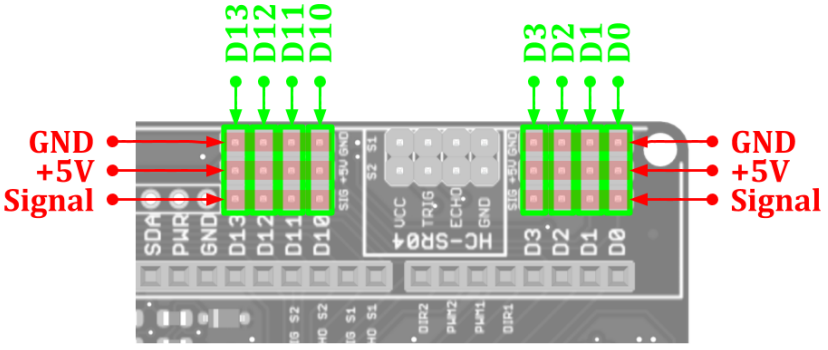
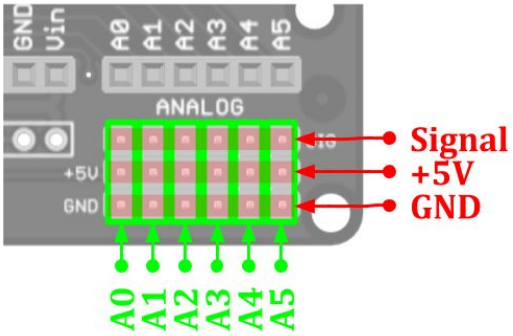
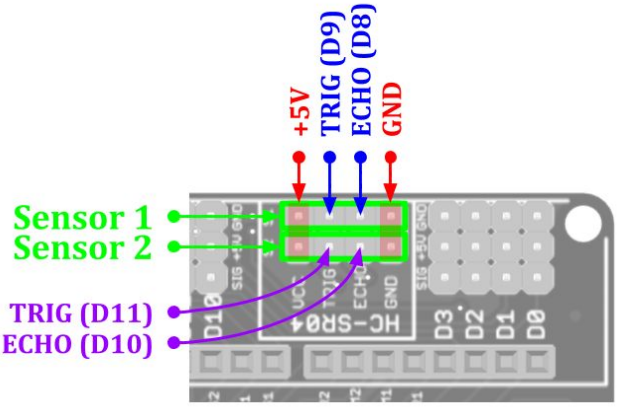


Figure 1: URC10 Board Functions

Function	Description
Power Input Terminal	Connect to battery. • VM : Positive • GND : Negative *Warning : Connecting in reverse polarity will damage the board instantaneously.*
Motors Terminal	Connect to motors. Motor direction depends on the polarity.
Power LED	Turn on when power up.
Motor Status LEDs	Turn on when the motor is running. • M1A / M2A : Forward* • M1B / M2B : Backward*
TX/RX LEDs	Turn on when data is transmitted/received via the serial port.
Test Buttons	Press to test the functionality of the motor driver. Motor will run at full speed. • M1A / M2A : Forward* • M1B / M2B : Backward*
Reset Button	Press to reset the microcontroller.
Arduino UNO Standard Female Header	The female header follows the standard Arduino UNO form factor. Can be used with compatible Arduino Shield. *Note : Pin D4, D5, D6 D7 are connected to motor driver internally. Avoid using shield that uses these pins.*

* *Actual motor direction is depending on the motor connection. Swapping the connection (MA & MB) will reverse the direction.*

Function	Description
Digital Port x 6	Digital Input/Output Port. This port is connected to pin D0 - D3 and D10 - D13. *Note : Pin D0 and D1 are used for serial communication.* 
Analog/Digital Port x 6	Analog Input or Digital Input/Output Port. This port is connected to pin A0 - A5. 
Arduino UNO Standard ISP Port	Standard Arduino UNO ISP Port. Used to load program via AVR Programmer. Can be used for SPI communication too.
HC-SR04 Ultrasonic Sensor Port x 2	Connect to HC-SR04 Ultrasonic Sensor. Sensor 1: • ECHO - D8 • TRIG - D9 Sensor 2: • ECHO - D10 • TRIG - D11 

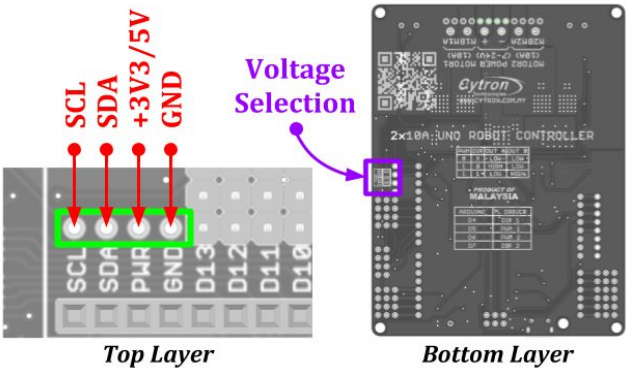
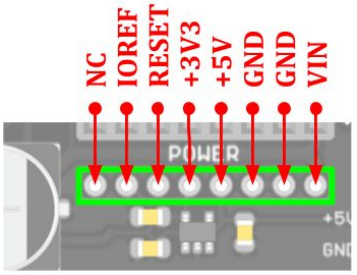
Function	Description
USB Micro B Connector	Used to upload Arduino program from PC. Can be used for debugging purpose too (Serial Monitor).
I2C Port	Connect to I2C slave device. Power voltage is selectable at bottom layer. +3V3 is selected by default. To select +5V, cut trace and solder center pad and 5V pad together.  *Top Layer* *Bottom Layer*
Power Port	Breakout of the Arduino power pins. 
Motor Driver Port (Connected Internally)	These pins are connected to the motor driver internally. Motor 1: • DIR - D4 • PWM - D5 Motor 2: • DIR - D7 • PWM - D6

Table 1: URC10 Board Functions

PWM	DIR	Output A (MA)	Output B (MB)	Motor
Low	**X (Don't Care)**	Low	Low	Brake
High	**Low**	High	Low	Forward*
High	**High**	Low	High	Backward*

Table 2: PWM/DIR Input Truth Table

* *Actual motor direction is depending on the motor connection.*
Swapping the connection (MA & MB) will reverse the direction.

2. SPECIFICATIONS

No	Parameters		Min	Max	Unit
1	Power Input Voltage (Vin)		8	25	VDC
2	Maximum Motor Current	Continuous	-	10	A
		Peak (< 10 seconds)	-	30	A
3	Logic Input Voltage	Low Level	0	0.7	V
		High Level	1.5	5.0	V
4	DC +3V3 Output Maximum Current		-	500	mA
5	DC +5V Output Maximum Current		-	1000	mA
6	IO pin Maximum Current		-	20	mA

Table 3: URC10 Absolute Maximum Ratings

3. DIMENSION

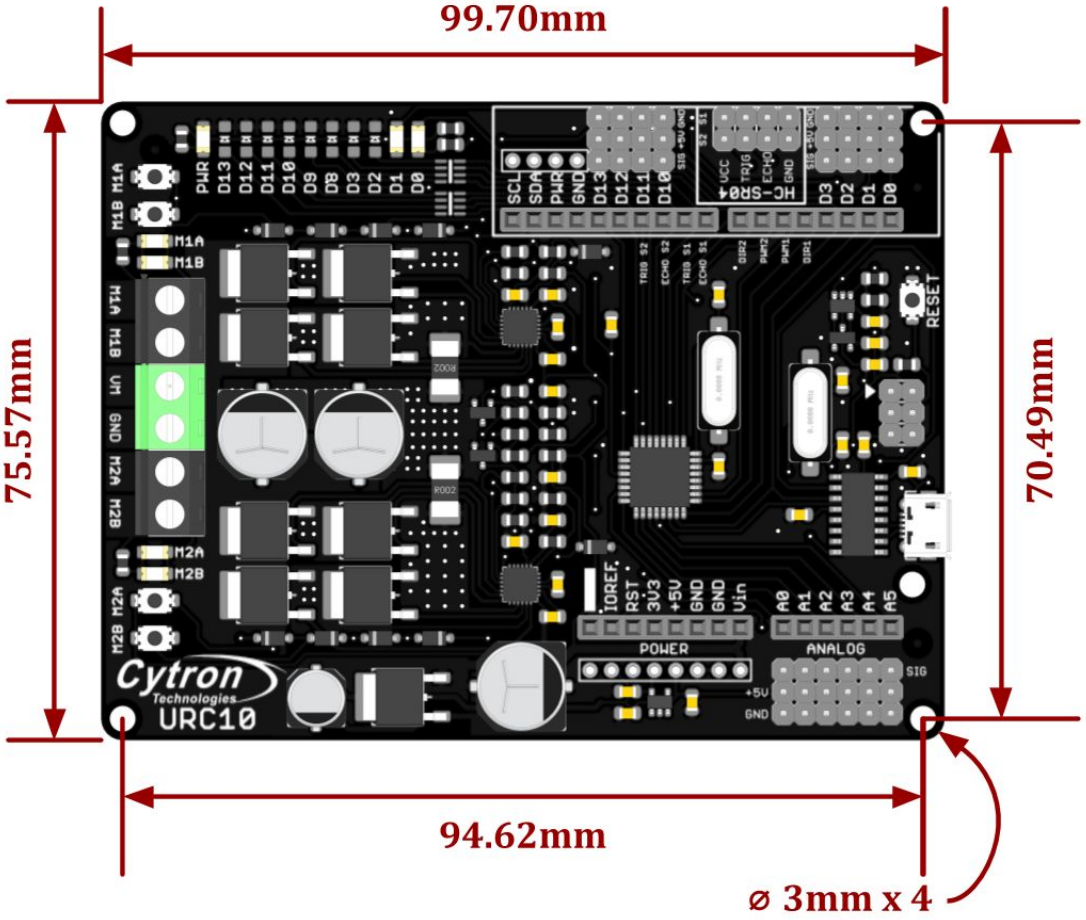


Figure 2: URC10 Dimension

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